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10/561,045	05/16/2006	Kenichi Nagayama	41514-5425	3962

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EXAMINER	
PERRY, ANTHONY T	

ART UNIT	PAPER NUMBER
2879	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,045	NAGAYAMA ET AL.	
	Examiner	Art Unit	
	ANTHONY T. PERRY	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,5-7,10,13-15 and 17-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,5-7,10,13-15 and 17-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/02/06*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

The Preliminary Amendment, filed on May 16, 2006 has been entered and acknowledged by the Examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 5-7, 10, 13-14, 17-18, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Staring et al. (US 5,986,400).

Regarding claim 3 , Staring et al. disclose an organic electroluminescence display panel (1) comprising: a plurality of organic electroluminescence devices, each of which comprises first (5) and second (9) display electrodes and an organic functional layer (7) sandwiched and stacked between the first and second display electrodes, the organic functional layer including at least a light emitting layer comprising a single organic compound layer; and a substrate (3) supporting the plurality of organic electroluminescence devices, wherein at least one of the first and second display electrodes comprises a common layer formed in common with the plurality of organic electroluminescence devices and the common layer comprises a low resistance region corresponding to the organic electroluminescence device and a high resistance region connected to the low resistance region and having a higher resistivity than the low

resistance region, wherein the high resistance region has a sheet resistance of 1 x 10^6 Ω/ or more (for example, see Fig. 2 and col. 3, lines 3-5).

Regarding claim 5, Staring discloses the organic electroluminescence display panel according to claim 3, wherein the difference in sheet resistance between the low resistance region and the high resistance region is equal to or greater than two orders of magnitude (for example, see col. 3, lines 3-7 and col. 4, lines 50-54).

Regarding claim 6, Staring discloses the organic electroluminescence display panel according to claim 3, wherein the high resistance region contains at least one of oxygen and nitrogen as an added ingredient, and has a higher content of at least one of oxygen and nitrogen than the low resistance region (for example, see col. 6, lines 60-65).

Regarding claim 7, Staring discloses the organic electroluminescence display panel according to claim 3, wherein the high resistance region contains a donor or an acceptor and has a lower content of the donor or acceptor than the low resistance region (for example, see col. 6, lines 60-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 5, 6, 7, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vossen, Jr. et al. (US 4,395,467).

Regarding claim 3, Vossen et al. disclose, wherein at least one of the first and second display electrodes comprises a common layer comprises a low resistance region and a high resistance region connected to the low resistance region and having a higher resistivity than the low resistance region, wherein the high resistance region has a sheet resistance of 1×10^6 Ω/▯ or more (for example, see col. 3, lines 3-11).

Vossen states that transparent conductive films have a wide variety of uses, including liquid crystal displays (for example, see col. 1, lines 10-14), but does not specifically recite the common layer including the transparent conductive region used in an organic electroluminescent device. However, it is widely known that organic electroluminescent displays use transparent conducting layers separated by insulating layers to form display electrodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the common layer including resistive and conductive regions, as taught by Vossen, would be useful in organic electroluminescent displays, where the conductive regions are used as the transparent display electrodes and the resistive regions are provided to insulate the electrodes form one another.

It is noted that organic electroluminescence display panels include a plurality of organic electroluminescence devices, each of which comprises first and second display electrodes and an organic functional layer sandwiched and stacked between the first and second display electrodes, wherein the organic functional layer includes at least a light emitting layer comprising a single organic compound layer; and a substrate supporting the plurality of organic electroluminescence devices.

Regarding claim 5, Vossen teaches the difference in sheet resistance between the low resistance region and the high resistance region is equal to or greater than two orders of magnitude (for example, see col. 3, lines 3-11).

Regarding claim 6, Vossen teaches the high resistance region contains at least one of oxygen and nitrogen as an added ingredient, and has a higher content of at least one of oxygen and nitrogen than the low resistance region (for example, see col. 2, line 53 – col. 3, line 11).

Regarding claim 7, Vossen teaches the high resistance region contains a donor or an acceptor and has a lower content of the donor or acceptor than the low resistance region (for example, see col. 2, line 53 – col. 3, line 11).

Regarding claim 13, Vossen teaches a method comprising the steps of: forming a common layer having a high resistance; and performing a resistance decreasing process in which a low resistance region having a resistivity lower than the resistivity of the common layer is partially formed to define a high resistance region having a higher resistivity than the low resistance region (for example, see col. 2, line 53 – col. 3, line 11).

Vossen states that transparent conductive films have a wide variety of uses, including liquid crystal displays (for example, see col. 1, lines 10-14), but does not specifically recite the common layer including the transparent conductive region used in an organic electroluminescent device. However, it is widely known that organic electroluminescent displays use transparent conducting layers separated by insulating layers to form display electrodes. It would have been obvious to one of ordinary skill in

the art at the time the invention was made that method of forming the common layer including resistive and conductive regions, as taught by Vossen, would be useful in manufacturing organic electroluminescent displays, where the conductive regions are used as the transparent display electrodes and the resistive regions are provided to insulate the electrodes form one another.

It is noted that organic electroluminescence display panels include a plurality of organic electroluminescence devices, each of which comprises first and second display electrodes and an organic functional layer sandwiched and stacked between the first and second display electrodes, wherein the organic functional layer includes at least a light emitting layer comprising a single organic compound layer; and a substrate supporting the plurality of organic electroluminescence devices.

Regarding claim 14, Vossen teaches the resistance decreasing process step comprises a process for partially reducing the common layer by placing the substrate in a reduction atmosphere (for example, see col. 2, line 53 – col. 3, line 11).

Regarding claim 15, Vossen teaches the resistance decreasing process step comprises a process for partially doping the donor or acceptor (for example, see col. 2, line 53 – col. 3, line 11).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes et al. (US 5,607,731).

Regarding claim 10, Haynes discloses a method comprising the steps of: forming a common layer having conductivity; and performing a resistance increasing process in which a high resistance region having a resistivity higher than the resistivity of the

common layer is partially formed to define a low resistance region (2) having a lower resistivity than the high resistance region (7), wherein the resistance increasing process step comprises a process for partially oxidizing or nitriding the common layer by placing the substrate in an oxygen or nitrogen atmosphere (for example, see Fig. 5 and col. 4, line 54 – col. 5, line 9).

Haynes states that the common layer may be used in forming electroluminescent displays (for example, see col. 5, lines 17-26), but does not specifically recite the common layer used in an organic electroluminescent device. However, it is widely known that organic electroluminescent displays use transparent conducting layers separated by insulating layers to form display electrodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the common layer including resistive and conductive regions, as taught by Haynes, would be useful in organic electroluminescent displays, where the conductive regions are used as the transparent display electrodes and the resistive regions are provided to insulate the electrodes form one another.

It is noted that organic electroluminescence display panels include a plurality of organic electroluminescence devices, each of which comprises first and second display electrodes and an organic functional layer sandwiched and stacked between the first and second display electrodes, wherein the organic functional layer includes at least a light emitting layer comprising a single organic compound layer; and a substrate supporting the plurality of organic electroluminescence devices.

Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes et al. (US 5,607,731).

Regarding claim 17 Haynes teaches a method comprising the steps of: forming a common layer having conductivity; performing a resistance increasing process in which a high resistance region having a resistivity higher than the resistivity of the common layer is partially formed to define a low resistance (7) region having a lower resistivity than the high resistance region (2) (for example, see Fig. 5 and col. 4, line 54 – col. 5, line 9).

Haynes does not specifically teach the method including a step of performing a resistance decreasing process in which a second low resistance region having a resistivity lower than the resistivity of the common layer is partially formed in the low resistance region.

However, Vossen teaches a method comprising a step of performing a resistance decreasing process in which a low resistance region having a resistivity lower than the resistivity of the common layer is partially formed to define a high resistance region having a higher resistivity than the low resistance region (for example, see col. 2, line 53 – col. 3, line 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the step of performing a resistance decreasing process, as taught by Vossen, in which a low resistance region having a resistivity lower than the resistivity of the common layer is partially formed to define a high resistance region having a higher resistivity than the low resistance region in order to ensure a proper

difference in resistivity of the high resisitivity region and the second low resistivity region is achieved.

Haynes states that the common layer may be used in forming electroluminescent displays (for example, see col. 5, lines 17-26) and Vossen states that transparent conductive films have a wide variety of uses, including liquid crystal displays (for example, see col. 1, lines 10-14), but neither specifically recite the common layer used in an organic electroluminescent device. However, it is widely known that organic electroluminescent displays use transparent conducting layers separated by insulating layers to form display electrodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the common layer including resistive and conductive regions (second low resistance region), as taught by the combined invention of Haynes and Vossen, would be useful in organic electroluminescent displays, where the second low resistance region is used as the transparent display electrodes and the resistive regions are provided to insulate the electrodes form one another.

It is noted that organic electroluminescence display panels include a plurality of organic electroluminescence devices, each of which comprises first and second display electrodes and an organic functional layer sandwiched and stacked between the first and second display electrodes, wherein the organic functional layer includes at least a light emitting layer comprising a single organic compound layer; and a substrate supporting the plurality of organic electroluminescence devices.

Regarding claim 18, Haynes teaches the resistance increasing process step comprises a process for partially oxidizing or nitriding the common layer by placing the substrate in an oxygen or nitrogen atmosphere (for example, see col. 4, line 54 – col. 5, line 9).

Regarding claim 19, Haynes teaches the common layer contains a donor or an acceptor, and the resistance increasing process step comprises a process for partially undoping the donor or acceptor (for example, see col. 4, line 54 – col. 5, line 9).

Regarding claim 20, Haynes teaches the common layer has an amorphous or polycrystalline structure, and the resistance increasing process step comprises a step of partially annealing the common layer in which a process for increasing an amount of presence of the grain boundaries in the crystalline structure in comparison with the low resistance region is performed (for example, see col. 3, lines 40-47 and col. 4, lines 9-16).

Regarding claim 21, Vossen teaches the resistance decreasing process step comprises a process for partially reducing the common layer by placing the substrate in a reduction atmosphere (for example, see col. 2, line 53 – col. 3, line 11).

Regarding claim 22 Vossen teaches the resistance decreasing process step comprises a process for partially doping the donor or acceptor (for example, see col. 2, line 53 – col. 3, line 11).

Regarding claim 23, Vossen teaches the common layer has an amorphous or polycrystalline structure, and the resistance decreasing process step comprises a step of partially annealing the low resistance region in which a process for decreasing an

amount of presence of the grain boundaries in the crystalline structure in comparison with the low resistance region is performed (for example, see col. 2, line 53 – col. 3, line 11).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. **The fax phone number for this Group is (571) 273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Anthony Perry/

/Sikha Roy/

Primary Examiner, Art Unit 2879

Anthony Perry
Patent Examiner

Art Unit 2879
March 28, 2008